REMARKS

Claims 2 - 15, 25, 26, 31, 38 - 44, 46 and 47 remain active in this application. Claims 1, 16 - 24, 27 - 30, 32 - 37 and 45 have previously been canceled. Claims 13, 38, 44 and 47 have been amended. Support for the amendments of the claims is found throughout the application, particularly in Figures 2 and 3 and the description thereof on pages 11 - 12. More specifically, language from a recitation of claim 13 has been added to claims 38 and 44 and language from a recitation of claims 38 and 44 has been added to claim 13 so that the language of that recitation is completely consistent in all independent claims. Further, claims 13 and 47 have been amended to improve form by adopting the Examiner's suggestions. No new matter has been introduced into the application.

The Examiner has objected to claims 13 - 15 and 47 due to improper antecedent language correspondence. This objection is respectfully traversed as being moot in view of the above amendments in which the Examiner's suggestions have been adopted. Additionally, in claim 13, references to "metal base" have been made consistent throughout the claim. Accordingly, reconsideration and withdrawal of this objection is respectfully requested.

Claims 2 - 7, 10, 12 - 14, 31, 38 - 44, 46 and 47 have been rejected under 35 U.S.C. §103 as being unpatentable over Baker in view of Maybon and Schaefer et al. (newly cited). Claims 8, 9, 11, 15, 25 and 26 have been rejected under 35 U.S.C. §103 as being unpatentable over Baker in view of Maybon, Schaefer et al. (newly cited) and Cox et al. In essence, the Examiner has added reliance on the newly cited reference to Schaefer et al. to grounds of rejection previously made and traversed

during the prosecution of this application. Both of these grounds of rejection are respectfully traversed for the reasons previously made of record which are hereby fully incorporated by reference and the further remarks provided below.

Before discussed these grounds of rejection in detail, the citation and application of Schaefer et al. appears to indicate an increased understanding of and appreciation for the invention by the Examiner and the same is noted with appreciation by the undersigned. The Examiner's efforts in this regard are also very much appreciated. As will be discussed below, Schaefer et al. appears to be significantly more relevant than prior art previously applied and, in fact, appears to serve to emphasize the deficiencies of the other prior art as previously argued. Nevertheless, it is Applicants' position that the combinations of prior art currently applied by the Examiner fail to answer explicit recitations of the claims and largely teach away from the subject matter claimed at points of difference of the invention therefrom and do not lead to an expectation of success in producing the claimed result of the claimed subject matter.

As previously pointed out, the invention is directed to a cutting die having a blade and method of making the die by forming a weld or cladding bead on a surface of a die body in a manner that allows the blade material to be freely chosen and results in the bead having a generally half-elliptical shape (with the major axis substantially perpendicular to the die body surface as illustrated in Figure 3 of the application) which is very close to the final desired blade shape while limiting the mixing and alloying of the blade material with the material of the die body, particularly near the cutting surface of the

blade. This is achieved, as claimed, by using a laser to melt a puddle of the die body material and then applying blade material, which is harder than the die body material, as a powder, to the surface of the puddle (including areas of the puddle where the laser beam is not impinging) such that the blade material melts in and on the surface of the puddle (which is also believed to stabilize thermal gradients near the surface of the puddle) to form a deposit which extends from the surface of the die body in a smooth, semi-elliptical shape as shown in Figure 3 of the present application.

These distinctive features of the invention are explicitly recited in the claims as follows (emphasis added):

Claim 13:

> a) *scanning* in an area along said path *with a laser beam to heat the metal base to form a puddle, an area of said puddle being greater than an area of said metal base on which said laser beam directly impinges* and simultaneously *supplying powdered metal* having a composition distinct from said metal base *to said puddle* along said predetermined path via a tube moving concurrently with and *radially spaced from an axis of said laser beam* so that said laser beam melts a thin layer of the metal base to form said puddle along said path and the *metal powder being delivered to the base is melted in said puddle and at a surface thereof* and thus forms a band of fused metal powder along said path,

and

> c) repeating step b) to produce multiple layers until a ridge of metal is formed along

said path, *said ridge having a substantially uniform height and width,*

claim 38:

a) heating an area of said die body *by scanning an area with a laser to form a puddle of melted die body material in said area in the surface* of said die body along a path corresponding to said pattern, *said area being greater than an area of said die body on which said laser directly impinges;*

b) *upon forming said puddle, applying a blade material in the form of a powder to said puddle* while continuing said step of heating said die body corresponding to said path *such that said powder is melted in said puddle and at a surface thereof* to form a *deposit comprising said blade material extending from said surface, said blade material having a hardness greater than said die body material;*

claim 39:

A method as recited in claim 38, wherein said deposit comprising said blade material is formed *having a generally half elliptical cross-section.*

claim 44:

a) heating an area of said die body by *scanning said area with a laser to form a puddle of melted die body material in said area in the surface* of said die body along a path corresponding to said pattern, said *area being greater than an area of said die body on which said laser directly impinges;*

b) *upon forming said puddle, applying a blade material* in the form of a powder *to said*

puddle while continuing said step of heating said die body corresponding to said path *such that said powder is melted in said puddle and at a surface thereof* to form *a substantially half elliptical deposit* comprising said blade material *extending from said surface*, said blade material *having a hardness greater than said die body material*;

Baker is an early and basic disclosure of forming a cutting die by forming a weld bead on a die body and machining only the weld bead to the final blade shape rather than the prior technique of machining the blade from a die blank formed from blade material. Since less machining is required for machining only the weld bead and the process is more economical, Baker discloses that it allows the use of blade materials which are harder and more abrasion resistant than previously practical to be economically feasible and suggests tungsten carbide as an example of a suitable blade material.

However, Baker discusses virtually no details of the manner by which the weld bead is formed other than (trivially) it is done by welding, either manually or by an automatic, tape-controlled machine (see column 3, lines 24 - 38). Baker does not teach or suggest the *combination* of forming a puddle of the die body material, particularly through use of a laser, and applying powdered blade material to the puddle upon formation of the puddle such that the blade material is melted in and at the surface of the puddle to form a *deposit of blade material* extending from the surface. The exemplary bead illustrated by Baker is relatively wide and flat which Baker evidently considers advantageous to provide "an adequate base from which the cutting edge can be formed" (column 3, lines 39 - 49) and to provide adhesion of the

bead to the die body and reinforce the blade (see column 4, lines 6 - 7). Thus, as seen from Figures 3 - 8 of Baker, a substantial portion of the weld bead must be machined away to form the cutting edge of the blade to a desired shape. In other words, the weld bead itself does not approximate the final desired shape of the blade as is achieved by the invention and referred to as "near net shape".

In this regard, it is believed to be important to observe that Baker does not mention formation of a puddle at all and does not mention or illustrate any penetration of the weld into the die body material as would necessarily occur if a puddle is formed as will be discussed below but does indicate that adhesion of the weld bead to the die body is of concern in the above noted passage of column 4, lines 6 - 7. While it is common for a puddle to be formed during welding, developing a weld bead can be accomplished without forming a puddle although the weld would have no significant penetration (consistent with the illustrations of Baker) into the die body material and the weld would be weaker (consistent with the concern for adhesion of the weld bead expressed in Baker). (A photograph of a weld bead formed by applying powder prior to forming a puddle was attached to the response filed February 20, 2007.) Nevertheless, forming a weld bead with only slight or no penetration of the weld into the base (e.g. die body) material may sometimes be desirable. For example, Baker discusses recycling of die blanks by "grinding off the weld bead" (column 2, line 5) which would be inconsistent with significant weld penetration into the die body due to formation of a puddle since the metallurgy of the die body is necessarily altered in regions where melting and weld penetration has occurred.

If, on the other hand, a puddle is formed, particularly as *molten* weld material is applied as is common in welding processes, substantial mixing of the weld material and the molten die body material in the puddle would be expected, thus forming an alloy of the die body material and the blade material and compromising the properties of the blade material. In fact, Schaefer et al., newly cited by the Examiner in regard to formation of a puddle, provides evidence of convection currents in the puddle as the puddle solidifies (see Figure 2 and column 4, lines 10 - 14). By the same token, the same Figure of Schaefer et al. also provides evidence that mixing is limited when hard surfacing material is applied to the puddle as a powder, particularly when the powdered material is less dense or where there is insufficient time that the puddle is in a molten state for particle infiltration to occur.

Therefore, it is respectfully submitted that, from the totality of the description of the process of Baker and the resulting structure reported by Baker, it is most logical to understand Baker as not forming a puddle at all, much less doing so by use of a laser *and in combination with* applying blade material in the form of a powder (both of which are explicitly recognized by the Examiner to be deficiencies of Baker) *upon formation of the puddle* such that the blade material is melted in and at the surface of the puddle. Conversely, it would be clearly *improper* to assume that a puddle (which is not disclosed as being formed in Baker) is formed incident to the deposition of the weld bead in Baker in view of the numerous indications disclosed in Baker which are inconsistent with formation of a puddle.

As will be discussed in greater detail below, formation of such a deposit, particularly of an

advantageous shape as is achieved by the invention, when the blade material is, in fact, melted in and at the surface of a puddle of molten die body material as claimed, would not be expected from the totality of the content of Baker, particularly in view of Schaefer et al. Rather, it is respectfully submitted that when the totality of the content of Baker is considered as a whole as is required by M.P.E.P. §2141.02(VI), Baker is not only deficient to answer the claims in regard to claim recitations beyond those recognized by the Examiner (e.g. formation of a puddle, the application of blade material upon, i.e. very shortly *after,* formation of the puddle and melting of the blade material in and at the surface of the puddle, in addition to the lack of teaching of the powder form of blade material and the use of a laser recognized by the Examiner) but teaches away from those recitations as well as from the combination or modification in accordance with Schaefer et al.

The Examiner appears to principally cite Maybon for teaching the use of a laser as a heat source; which observation is correct. The Examiner is also correct in observing that Maybon is directed to cladding a hard material onto a steel substrate. However, more specifically, it is respectfully submitted that Maybon is directed to forming an abrasion resistant *surface* and not a *cutting die blade* and does so by applying *both* a hard material and a "brazing alloy" (column 6, line 6) as a *mixture* of powders where *only* the brazing alloy is melted and then only by direct laser action *requiring* the area of laser incidence and powder impingement to "be as closely as possible coincident" (column 5, line 45), contrary to the claim recitation of formation of a puddle having an area being greater that the area on which the laser beam directly impinges.

Maybon also *necessarily relies* upon a difference of melting temperatures of the hard surfacing material and the brazing alloy being sufficiently different that the grains of tungsten carbide "are not affected by the laser beam" (column 7, lines 56 - 57) and, in particular, are not melted. Thus, when the melted brazing alloy again solidifies, a hard, "composite" metal matrix is formed which also possesses the appearance of roughness due to the *intact* grains of the hard abrasion resistant material which emerge from the surface as the brazing alloy is worn away (see column 2, lines 47 - 53).

No quality of "hardness" is attributed to the brazing material *per se* by Maybon. Rather, Maybon only attributes hardness to the abrasion resistant material which is not melted, as claimed, and the composite "metal matrix" which is not melted after it is formed. Therefore, Maybon clearly does not teach or suggest *any* melting of a blade material that has a greater hardness than the die body material.

Further, while Maybon mentions "surface melting of the substrate" (see column 3, line 19, column 6, lines 16 - 18, and column 7, lines 48 - 49), there is no mention of a "puddle", as the Examiner asserts. On the contrary, Maybon states that the "plate body 8 is relatively little affected by the heating effect of the laser beam" (column 7, lines 43 - 44) and that resurfacing "produces only a *small dilution* of the substrate" (column 7, lines 51 - 52, emphasis added). Further, the bonding of the metal matrix to the substrate occurs in a "thin layer 51" which does not exhibit any significant penetration into the substrate such as is evident in the Figures 2 and 3 of Schaefer et al. where formation of a puddle is, in fact, taught. Therefore, it is respectfully submitted that Maybon produces substrate melting in a manner that can

not reasonably be referred to as a "puddle", much less a puddle such that hard surfacing material can be melted in and at the surface thereof. (To contain sufficient heat to achieve such melting as is disclosed and claimed, the molten metal must be of at least sufficient volume to be characterized as a "puddle" even if relatively shallow and formed from a relatively thin layer of the die body. It is respectfully submitted that a formation of a "puddle" would be inconsistent with the resulting thin layer 51 and it is believed significant that Maybon does not so characterize what is referred to only as "surface melting".) Again, no melting of the grains of tungsten carbide occurs and such melting is evidently not even tolerable in Maybon which states that the "grains therefore retain all their mechanical properties, and in particular their hardness is not reduced" and the "abrasion resistant material based on generally spherical tungsten carbide grains can be used" (paragraph bridging columns 7 and 8). As with Baker, it would be improper to *assume* that Maybon forms a puddle of die body material where formation of a puddle is not disclosed and would be clearly inconsistent with the results obtained as shown in Figure 12 of Maybon and other indications in the specification and drawings of Maybon which are inconsistent with formation of a puddle.

Accordingly, it is respectfully submitted that the Examiner is incorrect in attributing formation of a puddle and/or the melting of the tungsten carbide in or at the surface of a puddle and teaches away from melting the tungsten carbide at all. In fact, Maybon teaches little of relevance to the invention as claimed or to the deficiencies of Baker to answer the claims beyond the use of a laser as a heat source and even then for performing an operation which is essentially brazing rather than

welding. Maybon clearly does not mitigate the deficiencies of Baker in regard to formation of a puddle, application of blade material as a powder *upon formation of a puddle* and such that the *blade material* having a greater hardness than the die body material (as distinct from the brazing alloy which is melted but no particular quality of hardness attributed to it, *per se)* is melted in and at the surface of the puddle. The Examiner evidently recognizes that melting of either the base material and/or the brazing alloy in Maybon is limited to the area of direct impingement of the laser, as well, and cites Schaefer et al. in regard to that deficiency of the combination of Baker and Maybon.

Schaefer et al., like Maybon, is directed to the cladding of an abrasion resistant material in a layer of substantial thickness on a more ductile material, substrate or matrix rather than forming a blade or deposit shape suitable for a die cutting blade. Also, like Maybon, the hard, abrasion resistant particles are not melted and it is disclosed that melting of the abrasion resistant material is not tolerable and must be avoided. In this regard, Schaefer et al. *requires* that the hard, abrasion resistant particles "do not melt or decompose at temperatures equal to or a few hundred degrees above the melting point of the matrix, or substrate 20, to prevent dissolution of the particles in the molten matrix" (column 4, lines 53 - 57).

However, Schaefer et al. differs from Maybon in that Schaefer et al. develops the matrix in which the abrasion resistant particles are embedded from the underlying substrate material rather than an applied brazing alloy, as is done in Maybon. Schaefer et al. notes at column 2, lines 24 - 44 that it may be suggested to apply a titanium carbide abrasion resistant material as a powder

to the metal surface *in front* of the laser beam but notes that no deposit of any significant thickness is developed and only a low concentration of titanium carbide particles occurs in the melt due to the low density of titanium carbide although some particles are incorporated by convection currents as shown in Figure 2 of Schaefer et al. Schaefer et al. also notes in the same paragraph that a hardened surface can be produced by forming a puddle with an arc welder and applying tungsten carbide particles much in the manner of the invention but indicates severe criticality in regard to time of infiltration of the particles before solidification of the melt and dissolution of the particles (which must be avoided) if sufficient infiltration time is, in fact, provided. Schaefer et al. makes no mention of developing a deposit of blade material which is harder than the die body material which extends away from the surface by such a technique. Further, Schaefer et al. indicates that this latter process is also critical in regard to relative density of the abrasion resistant particles and is not applicable to titanium carbide and, presumably, many other materials since only tungsten carbide is mentioned as a possible candidate for such a process and which, cannot reliably be performed due to criticality of solidification/infiltration time.

To solve these problems, Schaefer et al. forms a puddle using a laser and applies abrasion resistant particles *at high velocity* to drive the particles into the melt so that a higher concentration and good distribution of abrasion resistant particles can be achieved in the composite matrix *while avoiding melting of the abrasion resistant particles*. Schaefer et al. also seeks to avoid heating of the abrasion resistant particles by the laser beam. Again, the abrasion

resistant particles are not melted by or in and at the surface of the puddle and the deposit so formed is of a wear resistant matrix with embedded hard particles and not of blade material, per se, as the invention develops by applying blade material as a powder to the puddle such that the blade material is melted in and at the surface of the puddle which, in accordance with the invention, also results in the particularly advantageous shape of the deposit extending from the die body surface, as claimed, and limitation of mixing of the blade material with the melt due to application of the powder "upon formation of the puddle" (e.g. where puddle formation is complete and/or further heat is not being applied to the area of powder application.

The deposit of composite matrix material formed by Schaefer et al. evidently may be slightly raised from the surface as shown in Figure 3 of Schaefer et al., presumably due to the volume of the unmelted particles. However, Schaefer et al. does not mention the size or shape of the deposit since similar deposits are made at adjacent locations to build up a surface that can be machined to provide a large, flat wear resistant surface (see column 4, lines 3 - 20).

It is respectfully submitted that Schaefer et al., considered in its entirety, does not teach or suggest *the combination* of formation of a puddle using a laser *and* applying the blade material as a powder such that melting of the blade material is produced to form a deposit where the blade material extends from the die surface as claimed but must be considered as teaching away from at least melting of the blade material. While some processes are disclosed in Schaefer et al. that may seem superficially similar to the invention, the results of those that appear most relevant to the invention are

explicitly disclosed by Schaefer et al. to be deemed unacceptable or impractically critical to be reliably performed. Again, Schaefer et al. *requires* that melting of the abrasion resistant material be avoided and, importantly, does not indicate any recognition of and teaches away from the insight exploited by the present invention that a high quality deposit of blade material of an advantageous shape can be developed when melting of the blade material in and at the surface of a puddle of die body material is provided. Schaefer et al. certainly does not lead to an expectation that developing a deposit of blade material extending from a surface would result from forming a puddle and applying (without injecting) powdered blade material to the puddle formed by scanning of a laser to be of greater area than the area of laser impingement such that the powdered blade material is melted in and at the surface of the puddle.

It is also respectfully submitted that, while the Examiner cites Schaefer et al. for teaching formation of a puddle larger than the area on which the beam directly impinges, Schaefer et al. does not, in fact, appear to *necessarily* do so or indicate that any difference in area is of any significance to the result thereof derived in accordance with the invention. Reference numeral 14 indicates the laser beam and dashed lines appear to indicate the boundaries of the beam and is coincident with the boundaries of the puddle. Reference numeral 12 is not seen in the specification but the lead line to the legend "laser beam" appears to indicate that the boundaries of the laser beam are, in fact, indicated by the dashed lines. In any event, as disclosed in column 3, lines 8 - 41, the laser beam is "moved linearly" by sweeping the substrate under the beam such that the beam is moved across the substrate at a fixed velocity (about

one-third to over six times the laser beam diameter per second). Column 3, lines 32 - 33 indicate that the melt pool is "under or just behind the laser beam which caused the melt", which, together with the disclosure of linear relative motion of the laser beam implies that the leading edge of the area of laser impingement falls on an unmelted portion of the surface and, depending on melting and solidification rates, the area of the puddle is not necessarily greater than the area on which the laser beam directly impinges. Thus, depending on rates of melting and solidification, the area of the puddle may or may not be larger than the area on which the laser beam directly impinges.

In other words, there is no direct disclosure in Schaefer et al. of relative sizes of the puddle and the area on which the laser beam impinges and if the area of the puddle is larger than the area on which the laser beam impinges, it is an incident of the relative rates of melting and solidification rather than the laser being scanned to *establish* the puddle as disclosed and claimed. The relative motion of the laser beam and the surface in Schaefer et al. appears to be much different from and produces a much different result from that shown to be the result of the disclosed "scanning" in Figure 2 of this application with the puddle extending on opposite sides of the area of laser beam impingement. Accordingly, it is respectfully submitted that Schaefer et al. does not *necessarily* contain the teachings or suggestions for which it was cited by the Examiner (that the puddle area is necessarily greater than the area of direct impingement of the laser beam) or that the larger area is produced by "scanning") and thus does not mitigate the deficiencies of Baker and Maybon in that regard as discussed above.

In view of the foregoing, it is respectfully submitted that the Examiner has not made and cannot make a *prima facie* demonstration of obviousness of the claimed subject matter based on Baker, Maybon and Schaefer et al. since these reference taken alone or in any combination do not teach or suggest numerous features explicitly recited in the claims and, in some cases, do not contain the teachings or suggestions the Examiner attributes to them and which it is clearly improper to attribute to them when the references are considered in their entirety, particularly when explicit teachings or other indications in the references are inconsistent with such attributions, as discussed above. Moreover, the references do not lead to an expectation of success in obtaining a deposit of blade material extending from the die body surface, particularly of near net shape, by the *combination* of forming a puddle of greater area than the area of direct impingement of a laser beam by scanning of the laser beam and applying blade material that is of greater hardness than the die body material upon formation of the puddle such that the blade material is melted in and at the surface of the puddle. Further, the prior art relied upon by the Examiner, even though it may appear to superficially resemble some features of the invention, *teaches away* from other claimed features of the invention that it does not answer. Additionally, it is respectfully submitted that the *requirement* in the prior art that melting of the abrasion resistant material *must* be avoided when the abrasion resistant material is applied to a molten puddle of base material and the failure of the prior art (and Schaefer et al. in particular) to recognize that a deposit of blade material extending from the base material and of near net shape for forming a die cutting blade could be produced by

providing for melting of blade material in and at the surface of a puddle is extremely strong evidence that the level of ordinary skill in the art at the time the invention was made that is discernible from the prior art did not extend to the formation of a deposit suitable for a die cutting blade in the manner claimed. Accordingly, it is respectfully submitted that the prior art relied upon by the Examiner does not support the conclusion of obviousness that the Examiner has asserted. Thus, it is respectfully submitted that the ground of rejection based on Baker, Maybon and Schaefer et al. is clearly in error and untenable and, upon reconsideration, should be withdrawn.

In regard to the ground of rejection based on Baker, Maybon, Schaefer et al. and Cox et al., Cox is cited by the Examiner for teaching heat treating of a blade after the blade is formed. However, as previously pointed out, Cox et al. does not mitigate any of the deficiencies of the basic combination of Baker, Maybon, and Schaefer et al. discussed above and the Examiner has not asserted that Cox et al. contains any teaching or suggestion that even tends to do so. Therefore, it is respectfully submitted that no *prima facie* demonstration of obviousness of any claim has been or can be made based on the combination of teachings of Baker, Maybon, Schaefer et al. and Cox et al. and, upon reconsideration, this ground of rejection should be withdrawn as well.

In summary, the invention is directed to a cutting die and method of making it in which a novel procedure of blade material deposition including scanning a laser beam to produce a puddle of molten die body material larger that the area on which the laser impinges and upon formation of the puddle (or at a location separated radially from the axis of the laser beam), applying blade

material that has a greater hardness than the die body material to the puddle such that the blade material is melted in and on the surface of the puddle to form a deposit of blade material extending from the die body surface as explicitly recited in all independent claims of the application. None of the prior art, taken singly or in any combination, teaches or suggests the particular features of this process which results in a deposition of blade material which is unexpected both in advantageous material composition (e.g. with a greater proportion of blade material in the deposit and increasing with separation from the die body surface) and advantageous shape.

Specifically, neither Baker nor Maybon teach formation of a puddle and appear to teach away from forming a puddle by disclosure and illustration inconsistent therewith; in view of which, attribution of formation of a puddle to either of them would clearly be improper. Similarly, neither Maybon nor Schaefer et al is directed to forming a blade extending from a surface but, rather, formation of an abrasion resistant *surface*. Both Maybon and Schaefer et al. teach a requirement that the abrasion resistant material must not be melted and that the abrasion resistant surface is a composite matrix comprising either a brazing alloy or the substrate material having unaltered particles of the abrasion resistant material embedded therein forming a composite metal matrix and not a deposit of blade material.

Neither Maybon nor Schaefer et al. indicates that any useful or desirable result will be or even can be achieved if such melting occurs and particularly do not teach that even a deposit similar to that of Baker, much less the advantageous deposit shape achieved by the invention, can result. Further, like Schaefer et al.,

Maybon should be understood as seeking to clad the entirety of a surface (even though the surface is narrow) rather than developing a deposit shape appropriate to a blade. Thus, modification Maybon or Schaefer et al. would be improper under the precedent of In re Gordon, 221 U.S.P.Q. 1125 (Fed. Circ., 1984) since the modification (melting of the abrasion resistant particles) would render the abrasion resistant surfaces formed therein to be unsatisfactory for their intended purpose (see M.P.E.P. §2143.01(V) and the proposed modification of Baker and/or Maybon by forming a puddle as in Schaefer et al. would be improper under M.P.E.P. §2143.01(VI) since the principle of operation would be altered. Most importantly, none of the references relied upon teach forming a deposit of blade material extending from a surface by melting of a blade material which has a hardness greater than die body material through application of blade material to a puddle of molten die body material or lead to an expectation of success in producing such a deposit or any other useful result, particularly forming a deposit of particularly advantageous shape and composition, by doing so. Further, in regard to product-by process claim 44, it is respectfully submitted to have been amply demonstrated that the cutting die produced by the invention is much different and distinct from that of Baker as appears to be recognized by the Examiner.

Accordingly, it is respectfully submitted that the conclusion of obviousness asserted by the Examiner cannot be reached by a clear and compelling line of reasoning based on the actual content of the reference relied upon and that the asserted grounds of rejection are in error and untenable. Rather, by seeking to supplement the teachings of Baker in regard to the method of developing

a weld bead with teachings from references in which both a deposit shape appropriate to a blade and melting of blade or abrasion resistant materials that results in such a shape are undesirable, the Examiner's application of prior art is clearly seen to be an exercise in attempted hindsight reconstruction of the invention based on substantially non-analogous art which still fails to address explicit and salient recitations of the claims. Therefore, it is respectfully submitted that, upon reconsideration in view of the foregoing remarks, the asserted grounds of rejection should be withdrawn and such action is respectfully requested.

A sincere effort has been made to provide a thorough response to the outstanding office action and to provide further assistance to the Examiner in regard to a correct understanding of the prior art. It is recognized that the above comments are lengthy and, in some respects, quite technical. If, upon reconsideration, any issues are seen to remain or if the undersigned can provide any further assistance to the Examiner in regard to the above comments or in reconsideration of this application, it is requested that the Examiner contact the undersigned by telephone at the number given below so that a further interview can be scheduled.

Since all rejections, objections and requirements contained in the outstanding official action have been fully answered and shown to be in error and/or inapplicable to the present claims, it is respectfully submitted that reconsideration is now in order under the provisions of 37 C.F.R. §1.111(b) and such reconsideration is respectfully requested. Upon reconsideration, it is also respectfully submitted that this application is in condition for allowance and such action is therefore respectfully requested.

A petition for a three-month extension of time has been made above. If any further extension of time is available and required for this response to be considered as being timely filed, a conditional petition is hereby made for such extension of time. Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Respectfully submitted,

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